



Contribution ID: 20

Type: Poster

P79 - Elemental Quantification of Gunshot Residues

Friday, 11 July 2014 13:00 (1 hour)

Gunshot residues (GSR) constitute a relatively easy way to identify an event where a firearm was discharged. Usually, GSR are deposited in the vicinity of the firing event including surfaces, objects and the body of the shooter. Such particles are characterized by a mixture of elements present in the primer, projectile, gun powder, case and projectile. The aim of the present study is to measure the elemental concentration of a large number of particles ejected during the discharge of a firearm in order to establish a correlation between the GSR and the components that participate in the generation of them.

The samples of ammunition used in this work were provided by the Ballistics Section of the Department of Criminalistics (Instituto General de Perícias - IGP) located in Porto Alegre. The ammunition under study is the 38 SPL caliber, ogival lead type (CHOG), which was chosen with the criterion of being one of the most widely used both by police and by criminals.

The analysis were carried out at the microprobe facility at the Ion Implantation Laboratory. A 3 MV Tandetron accelerator delivered 3.0 MeV protons at the Oxford microprobe chamber. An Oxford triplet system focused the proton beam to $2 \times 2 \mu\text{m}^2$. Characteristics X-rays were detected by a Si(Li) detector.

The results indicate that the relative elemental concentrations vary from particle to particle. A possible correlation between particle size and relative elemental concentration is discussed.

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Session Classification: Poster Session with Cheese and Wine